Microbac

Laboratory Report Number: L13101692

Mark Lyon
Environmental Waste Solutions
2440 Louisiana Blvd
Albuquerque, NM 87110

Please find enclosed the analytical results for the samples you submitted to Microbac Laboratories. Review and compilation of your report was completed by Microbac's Ohio Valley Division (OVD). If you have any questions, comments, or require further assistance regarding this report, please contact your service representative listed below.

Laboratory Contact:
Stephanie Mossburg – Team Chemist/Data Specialist
(740) 373-4071
Stephanie.Mossburg@microbac.com

I certify that all test results meet all of the requirements of the DoD QSM and other applicable contract terms and conditions. Any exceptions are attached to this cover page or addressed in the method narratives presented in the report. All results for soil samples are reported on a 'dry-weight' basis unless specified otherwise. Analytical results for water and wastes are reported on a 'as received' basis unless specified otherwise. A statement of uncertainty for each analysis is available upon request. This laboratory report shall not be reproduced, except in full, without the written approval of Microbac Laboratories, DoD ELAP certification number 2936.01. The reported results are related only to the samples analyzed as received.

This report was certified on November 13 2013

David L. Vandenberg

David Vandenberg – Managing Director

State of Origin: NM
Accrediting Authority: N/A ID:N/A
QAPP: DOD Ver 4.1 without flagging

Microbac

Lab Report #: L13101692
Lab Project #: 3005.011
Project Name: White Sands MR
Lab Contact: Stephanie Mossburg

Record of Sample Receipt and Inspection

Comments/Discrepancies

This is the record of the shipment conditions and the inspection records for the samples received and reported as a sample delivery group (SDG). All of the samples were inspected and observed to conform to our receipt policies, except as noted below.

There were no discrepancies.

Discrepancy	Resolution

Coolers

Cooler #	Temperature Gun	Temperature	COC #	Airbill #	Temp Required?
0018240	I	0.0		1002241113760004575000804334337640	X

Inspection Checklist

#	Question	Result
1	Were shipping coolers sealed?	Yes
2	Were custody seals intact?	Yes
3	Were cooler temperatures in range of 0-6?	Yes
4	Was ice present?	Yes
5	Were COC's received/information complete/signed and dated?	Yes
6	Were sample containers intact and match COC?	Yes
7	Were sample labels intact and match COC?	Yes
8	Were the correct containers and volumes received?	Yes
9	Were samples received within EPA hold times?	Yes
10	Were correct preservatives used? (water only)	Yes
11	Were pH ranges acceptable? (voa's excluded)	Yes
12	Were VOA samples free of headspace (less than 6mm)?	Yes

Microbac

Lab Report #: L13101692
Lab Project #: 3005.011
Project Name: White Sands MR
Lab Contact: Stephanie Mossburg

Samples Received

Client ID	Laboratory ID	Date Collected	Date Received
HTA-1013-WC	L13101692-01	10/25/2013 12:30	10/26/2013 09:31

Microbac Laboratories ● Ohio Valley Division
158 Starlite Drive, Marietta, OH 45750 ● T: (740)373-4071 F: (740)373-4835
www.microbac.com

Login Number: L13101692
Department: Volatiles
Analyst: Tiffany Bailey

METHOD

Preparation SW-846 5030C/5035A

Analysis SW-846 8260B

HOLDING TIMES

Sample Preparation: All holding times were met.

Sample Analysis: All holding times were met.

PREPARATION

Sample preparation proceeded normally.

CALIBRATION

Initial Calibration: For all compounds that yielded a %RSD greater than 15%, linear or higher order equations were applied. All acceptance criteria were met.

Alternate Source Standards: The percent difference was out of range for the following analytes: dichlorodifluoromethane. Please see the applicable QC report for a detailed presentation of the failures.

Continuing Calibration and Tune: All acceptance criteria were met.

BATCH QA/QC

Method Blank: All acceptance criteria were met.

Laboratory Control Sample: Recoveries out of range were observed for the following analytes: Chloromethane. Please see the applicable QC report for a detailed presentation of the failures.

Matrix Spikes: The MS/MSD results were not associated with this sample delivery group (SDG), due to insufficient volume of sample. The laboratory included an LCS and LCS duplicate in the preparation batch in lieu of the NELAC prescribed MS/MSD. Microbac Laboratories recommends site specific MS/MSD samples to avoid possible data

qualifications.

SAMPLES

Internal Standards: All acceptance criteria were met.

Surrogates: All acceptance criteria were met.

Other: None.

Manual Integration Reason Codes

Reason #1: Data System Fails to Select Correct Peak. In some cases the chromatography system selects and integrates the 'wrong peak'. In this case the analyst must correct the selection and force the system to integrate the proper peak. Other times the system may miss the peak completely.

Reason #2: Data System Splits the Peak Incorrectly or Integrates a False Peak as a Rider Peak. This phenomena is common at low concentrations where the signal:noise ratio is low. A single compound (peak) is incorrectly split into multiple peaks or integrated as a main peak with one or more rider peaks resulting in low area counts for the target compound.

Reason #3: Improperly Integrated Isomers and/or coeluting compounds. This system often fails to distinguish coeluting compounds and or isomers. The integration areas and concentrations are wrong, and they must be corrected by manual integration. Prime examples are benzo(k)fluoranthene and benzo(b)fluoranthene which are often unresolved and integrated improperly when both are present at low concentrations in standards or samples.

Reason #4: System Establishes Incorrect Baseline. There are numerous situations in chromatography where the system establishes the baseline incorrectly. Some baseline errors will be obvious to the analyst and should be corrected via manual procedures.

Reason #5: Miscellaneous. Other situations involving integration errors may require in-depth review and technical judgment. These cases should be brought to the attention of the laboratory management. If the form of manual integration is not clearly covered by these four cases, then review and approval by the Managing Director or the QAO will be required.

I certify that this data package is in compliance with the terms and conditions agreed to by the client and Microbac Laboratories Inc., both technically and for completeness, except for the conditions noted above. Release of the data contained in this hard copy data package has been authorized by the Laboratory Manager or designated person, as verified by the following signature.

Narrative ID: 74045
Approved By: Michael Albertson

Login Number: L13101692
Department: Semivolatiles
Analyst: Cassie A. Augenstein

METHOD

Preparation 3510C/1311

Analysis SW-846 8270C

HOLDING TIMES

Sample Preparation: Sample 01 was re-extracted out of hold.

Sample Analysis: All holding times were met.

PREPARATION

Sample preparation proceeded normally.

CALIBRATION

Initial Calibration: For all compounds that yielded a %RSD greater than 15%, linear or higher order equations were applied. All acceptance criteria were met.

Alternate Source Standards: All acceptance criteria were met.

Continuing Calibration and Tune: Recoveries out of range were observed for the following analyte: Benzoic Acid. Please see the applicable QC report for a detailed presentation of the failures.

BATCH QA/QC

Method Blank: All acceptance criteria were met.

Laboratory Control Sample: All hits in the LCS were biased high; there were no hits found in the samples associated with the LCS.

Sample #	Analyte	Date	Result	Lower	Upper	Type
WG450882-02	Pentachlorophenol	2013-11-04 17:33:00	124	40	115	Recovery
WG451558-02	2,4,5-Trichlorophenol	2013-11-07 11:46:00	112	50	110	Recovery

WG451558-02	Acenaphthene	2013-11-07 11:46:00	111	45	110	Recovery
WG451558-02	Anthracene	2013-11-07 11:46:00	118	55	110	Recovery
WG451558-02	Benzo[a]anthracene	2013-11-07 11:46:00	116	55	110	Recovery
WG451558-02	Benzo[a]pyrene	2013-11-07 11:46:00	115	55	110	Recovery
WG451558-02	Butyl Benzyl Phthalate	2013-11-07 11:46:00	116	45	115	Recovery
WG451558-02	Chrysene	2013-11-07 11:46:00	120	55	110	Recovery
WG451558-02	Di-n-Butyl Phthalate	2013-11-07 11:46:00	119	55	115	Recovery
WG451558-02	Dibenzofuran	2013-11-07 11:46:00	107	55	105	Recovery
WG451558-02	Fluoranthene	2013-11-07 11:46:00	120	55	115	Recovery
WG451558-02	Fluorene	2013-11-07 11:46:00	113	50	110	Recovery
WG451558-02	Hexachlorobenzene	2013-11-07 11:46:00	115	50	110	Recovery
WG451558-02	Diphenylamine/n-Nitrosodiphenylamine	2013-11-07 11:46:00	114	50	110	Recovery
WG451558-02	n-Nitrosodipropylamine	2013-11-07 11:46:00	138	35	130	Recovery
WG451558-02	Pentachlorophenol	2013-11-07 11:46:00	130	40	115	Recovery
WG451558-02	Phenanthrene	2013-11-07 11:46:00	117	50	115	Recovery
WG451558-03	Anthracene	2013-11-07 12:18:00	111	55	110	Recovery
WG451558-03	Chrysene	2013-11-07 12:18:00	113	55	110	Recovery
WG451558-03	Pentachlorophenol	2013-11-07 12:18:00	121	40	115	Recovery

Matrix Spikes: The MS/MSD results were not associated with this sample delivery group.

SAMPLES

Samples: All acceptance criteria were met.

Internal Standards: All acceptance criteria were met.

Surrogates: Sample 01 was re-extracted and yielded acceptable recoveries; both extractions were reported.

Sample #	Analyte	Date	Result	Lower	Upper	Type
L13101692-01	2-Fluorobiphenyl	2013-11-04 19:06:00	42.9	50	110	Recovery
L13101692-01	p-Terphenyl-d14	2013-11-04 19:06:00	27.5	50	135	Recovery

Manual Integration Reason Codes

Reason #1: Data System Fails to Select Correct Peak In some cases the chromatography system selects and integrates the 'wrong peak'. In this case the analyst must correct the selection and force the system to integrate the proper peak. Other times the system may miss the peakcompletely.

Reason #2: Data System Splits the Peak Incorrectly or Integrates a False Peak as a Rider Peak This phenomena is common at low concentrations where the signal:noise ratio is low. A single compound (peak) is incorrectly split into multiple peaks or integrated as a main peak with one or more rider peaks resulting in low areacounts for the target compound.

Reason #3: Improperly Integrated Isomers and/or coeluting compounds. This system often fails to distinguish coeluting compounds and or isomers. The integration areas and concentrations are wrong, and they must be corrected by

manual integration. Prime examples are benzo(k)fluoranthene andbenzo(b)fluoranthene which are often unresolved and integrated improperly when both are present at low concentrations in standards or samples.

Reason #4: System Establishes Incorrect Baseline There are numerous situations in chromatography where the system establishes the baseline incorrectly. Some baseline errors will be obvious to the analyst and should be corrected via manual procedures.

Reason #5: Miscellaneous Other situations involving integration errors may require in-depth review and technical judgment. These cases should be brought to the attention of the laboratory management. If the form of manual integration is not clearly covered by these four cases, then review and approval by the Managing Director or the QAO will be required.

I certify that this data package is in compliance with the terms and conditions agreed to by the client and Microbac Laboratories Inc., both technically and for completeness, except for the conditions noted above. Release of the data contained in this hard copy data package has been authorized by the Laboratory Manager or designated person, as verified by the following signature.

Narrative ID: 74156
Approved By: Mike Cochran

Login Number: L13101692
Department: Conventionals
Analyst: Tammy Morris

METHOD

Analysis SW846 9040C,9045D/EPA 150.1/SM4500-H B (pH)

HOLDING TIMES

Sample Analysis: All holding times were met.

PREPARATION

Sample preparation proceeded normally.

BATCH QA/QC

Method Blank: All acceptance criteria were met.

Laboratory Control Sample: All acceptance criteria were met.

Matrix Spikes: All acceptance criteria were met.

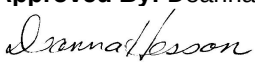
Duplicates: All acceptance criteria were met.

SAMPLES

Samples: All acceptance criteria were met.

I certify that this data package is in compliance with the terms and conditions agreed to by the client and Microbac Laboratories Inc., both technically and for completeness, except for the conditions noted above. Release of the data contained in this hard copy data package has been authorized by the Laboratory Manager or designated person, as verified by the following signature.

Narrative ID: 73798
Approved By: Deanna Hesson



Login Number: L13101692
Department: Metals
Analyst: Kim Rhodes

METHOD

Preparation: SW-846 3015

Analysis: SW-846 6010

HOLDING TIMES

Sample Preparation: All holding times were met.

Sample Analysis: All holding times were met.

PREPARATION

Sample preparation proceeded normally.

CALIBRATION

Initial Calibration: All acceptance criteria were met.

Alternate Source Standards: All acceptance criteria were met.

Interference Check Standards: All acceptance criteria were met.

Continuing Calibration Verification: All acceptance criteria were met.

Continuing Calibration Blank: All acceptance criteria were met.

BATCH QA/QC

Method Blank: All acceptance criteria were met.

Laboratory Control Sample: All acceptance criteria were met.

Serial Dilution/Post Digestion Spikes: WG450815 - All acceptance criteria were met.

Matrix Spikes: All acceptance criteria were met.

SAMPLES

Samples: All acceptance criteria were met.

Narrative ID: 73761
Approved By: Sheri Pfalzgraf

Login Number: L13101692
Department: Metals
Analyst: Ji Hu

METHOD

Preparation: SW-846 3015

Analysis: SW-846 6020

HOLDING TIMES

Sample Preparation: All holding times were met.

Sample Analysis: All holding times were met.

PREPARATION

Sample preparation proceeded normally.

CALIBRATION

Initial Calibration: All acceptance criteria were met.

Alternate Source Standards: All acceptance criteria were met.

Interference Check Standards: All acceptance criteria were met.

Continuing Calibration: All acceptance criteria were met.

Continuing Calibration Blank: All acceptance criteria were met.

Low Level Check: All acceptance criteria were met.

BATCH QA/QC

Method Blank: All acceptance criteria were met.

Laboratory Control Sample: All acceptance criteria were met.

Serial Dilution/Post Digestion Spikes: WG450843 - All acceptance criteria were met.

Matrix Spikes: All acceptance criteria were met.

Samples: All acceptance criteria were met.

SAMPLES

Narrative ID: 73672
Approved By: Sheri Pfalzgraf

Login Number: L13101692
Department: Metals - AA
Analyst: Pierce Morris

METHOD

Preparation: SW-846 7470

Analysis: SW-846 7470

HOLDING TIMES

Sample Preparation: All holding times were met.

Sample Analysis: All holding times were met.

PREPARATION

Sample preparation proceeded normally.

CALIBRATION

Initial Calibration: All acceptance criteria were met.

Alternate Source Standards: All acceptance criteria were met.

Interference Check Standards: All acceptance criteria were met.

Continuing Calibration Verification: All acceptance criteria were met.

Continuing Calibration Blank: All acceptance criteria were met.

BATCH QA/QC

Method Blank: All acceptance criteria were met.

Laboratory Control Sample: All acceptance criteria were met.

Serial Dilution/Post Digestion Spikes: WG451102 - All acceptance criteria were met.

Matrix Spikes: All acceptance criteria were met.

SAMPLES

Samples: All acceptance criteria were met.

Narrative ID: 73806
Approved By: Sheri Pfalzgraf

Certificate of Analysis

Sample #:	L13101692-01	**PrePrep Method:**	N/A	**Instrument:**	HPMS8
Client ID:	HTA-1013-WC	**Prep Method:**	5030B/5030C/5035A	**Prep Date:**	N/A
Matrix:	Water	**Analytical Method:**	8260B	**Cal Date:**	10/13/2013 21:32
Workgroup #:	WG451101	**Analyst:**	TMB	**Run Date:**	11/01/2013 18:25
Collect Date:	10/25/2013 12:30	**Dilution:**	1	**File ID:**	8M392192
Sample Tag:	01	**Units:**	ug/L		

Analyte	CAS #	Result	Qual	LOQ	LOD
1,1,1-Trichloroethane	71-55-6		U	1.00	0.250
1,1,2,2-Tetrachloroethane	79-34-5		U	1.00	0.200
1,1,2-Trichloroethane	79-00-5		U	1.00	0.250
1,1-Dichloroethane	75-34-3		U	1.00	0.125
1,1-Dichloroethene	75-35-4		U	1.00	0.500
1,2,3-Trichloropropane	96-18-4		U	1.00	0.500
1,2,4-Trichlorobenzene	120-82-1		U	1.00	0.200
1,2,4-Trimethylbenzene	95-63-6		U	1.00	0.250
1,2-Dibromo-3-chloropropane	96-12-8		U	2.00	1.00
1,2-Dibromoethane	106-93-4		U	1.00	0.250
1,2-Dichlorobenzene	95-50-1		U	1.00	0.125
1,2-Dichloroethane	107-06-2		U	1.00	0.250
1,2-Dichloropropane	78-87-5		U	1.00	0.200
1,3,5-Trimethylbenzene	108-67-8		U	1.00	0.250
1,3-Dichlorobenzene	541-73-1		U	1.00	0.250
1,4-Dichlorobenzene	106-46-7		U	1.00	0.125
2-Butanone	78-93-3		U	5.00	2.50
2-Chlorotoluene	95-49-8		U	1.00	0.125
2-Hexanone	591-78-6		U	5.00	2.50
4-Chlorotoluene	106-43-4		U	1.00	0.250
4-Methyl-2-pentanone	108-10-1		U	5.00	2.50
Acetone	67-64-1	21.8		5.00	2.50
Benzene	71-43-2		U	1.00	0.125
Bromobenzene	108-86-1		U	1.00	0.125
Bromodichloromethane	75-27-4		U	1.00	0.250
Bromoform	75-25-2		U	1.00	0.500
Bromomethane	74-83-9		U	1.00	0.500
Carbon disulfide	75-15-0		U	1.00	0.500
Carbon tetrachloride	56-23-5		U	1.00	0.250
Chlorobenzene	108-90-7		U	1.00	0.125
Chlorodibromomethane	124-48-1		U	1.00	0.250
Chloroethane	75-00-3		U	1.00	0.500
Chloroform	67-66-3		U	1.00	0.125

Certificate of Analysis

Analyte	CAS #	Result	Qual	LOQ	LOD
Chloromethane	74-87-3	1.14		1.00	0.500
cis-1,2-Dichloroethene	156-59-2		U	1.00	0.250
cis-1,3-Dichloropropene	10061-01-5		U	1.00	0.250
Dichlorodifluoromethane	75-71-8		U	1.00	0.250
Ethylbenzene	100-41-4		U	1.00	0.250
Hexachlorobutadiene	87-68-3		U	1.00	0.250
Isopropylbenzene	98-82-8		U	1.00	0.250
Methyl t-butyl ether (MTBE)	1634-04-4		U	1.00	0.500
Methylene chloride	75-09-2		U	1.00	0.250
n-Butylbenzene	104-51-8		U	1.00	0.250
n-Propylbenzene	103-65-1		U	1.00	0.125
Naphthalene	91-20-3		U	1.00	0.200
sec-Butylbenzene	135-98-8		U	1.00	0.250
Styrene	100-42-5		U	1.00	0.125
tert-Butylbenzene	98-06-6		U	1.00	0.250
Tetrachloroethene	127-18-4		U	1.00	0.250
Toluene	108-88-3		U	1.00	0.250
trans-1,2-Dichloroethene	156-60-5		U	1.00	0.250
trans-1,3-Dichloropropene	10061-02-6		U	1.00	0.500
Trichloroethene	79-01-6		U	1.00	0.250
Trichlorofluoromethane	75-69-4		U	1.00	0.250
Vinyl acetate	108-05-4		U	5.00	2.50
Vinyl chloride	75-01-4		U	1.00	0.250
Xylenes	1330-20-7		U	1.00	0.500

Surrogate	Recovery	Lower Limit	Upper Limit	Q
1,2-Dichloroethane-d4	87.6	70	120	
4-Bromofluorobenzene	83.0	75	120	
Dibromofluoromethane	101	85	115	
Toluene-d8	95.4	85	120	

U	Analyte was not detected. The concentration is below the reported LOD.

Certificate of Analysis

Sample #:	L13101692-01	**PrePrep Method:**	N/A	**Instrument:**	HPMS12
Client ID:	HTA-1013-WC	**Prep Method:**	3510C	**Prep Date:**	10/31/2013 11:00
Matrix:	Water	**Analytical Method:**	8270C	**Cal Date:**	10/29/2013 14:04
Workgroup #:	WG451120	**Analyst:**	CAA	**Run Date:**	11/04/2013 19:06
Collect Date:	10/25/2013 12:30	**Dilution:**	1	**File ID:**	12M46649
Sample Tag:	01	**Units:**	ug/L		

Analyte	CAS #	Result	Qual	LOQ	LOD
1,2,4-Trichlorobenzene	120-82-1		U	11.5	2.87
1,2-Dichlorobenzene	95-50-1		U	11.5	2.87
1,3-Dichlorobenzene	541-73-1		U	11.5	2.87
1,4-Dichlorobenzene	106-46-7		U	11.5	2.87
2,4,5-Trichlorophenol	95-95-4		U	11.5	2.87
2,4,6-Trichlorophenol	88-06-2		U	11.5	2.87
2,4-Dichlorophenol	120-83-2		U	11.5	2.87
2,4-Dimethylphenol	105-67-9		U	11.5	2.87
2,4-Dinitrophenol	51-28-5		U	46.0	14.4
2,4-Dinitrotoluene	121-14-2		U	11.5	2.87
2,6-Dinitrotoluene	606-20-2		U	11.5	2.87
2-Chloronaphthalene	91-58-7		U	11.5	2.87
2-Chlorophenol	95-57-8		U	11.5	2.87
2-Methylnaphthalene	91-57-6		U	11.5	2.87
2-Methylphenol	95-48-7		U	11.5	2.87
2-Nitroaniline	88-74-4		U	46.0	14.4
2-Nitrophenol	88-75-5		U	11.5	2.87
3,3'-Dichlorobenzidine	91-94-1		U	11.5	2.87
3-,4-Methylphenol	106-44-5		U	11.5	2.87
3-Nitroaniline	99-09-2		U	46.0	14.4
4,6-Dinitro-2-methylphenol	534-52-1		U	46.0	14.4
4-Bromophenyl-phenylether	101-55-3		U	11.5	2.87
4-Chloro-3-methylphenol	59-50-7		U	11.5	2.87
4-Chloroaniline	106-47-8		U	11.5	2.87
4-Chlorophenyl-phenyl ether	7005-72-3		U	11.5	2.87
4-Nitroaniline	100-01-6		U	46.0	14.4
4-Nitrophenol	100-02-7		U	46.0	14.4
Acenaphthene	83-32-9		U	11.5	2.87
Acenaphthylene	208-96-8		U	11.5	2.87
Anthracene	120-12-7		U	11.5	2.87
Benzo(a)anthracene	56-55-3		U	11.5	2.87
Benzo(a)pyrene	50-32-8		U	11.5	2.87

Certificate of Analysis

Analyte	CAS #	Result	Qual	LOQ	LOD
Benzo(b)fluoranthene	205-99-2		U	11.5	2.87
Benzo(g,h,i)Perylene	191-24-2		U	11.5	2.87
Benzo(k)fluoranthene	207-08-9		U	11.5	2.87
Benzoic acid	65-85-0		U	46.0	14.4
Benzyl alcohol	100-51-6		U	11.5	2.87
Bis(2-Chloroethoxy)Methane	111-91-1		U	11.5	2.87
Bis(2-Chloroethyl)ether	111-44-4		U	11.5	2.87
bis(2-Chloroisopropyl)ether	39638-32-9		U	11.5	2.87
bis(2-Ethylhexyl)phthalate	117-81-7		U	11.5	3.45
Butylbenzylphthalate	85-68-7		U	11.5	2.87
Chrysene	218-01-9		U	11.5	2.87
Di-N-Butylphthalate	84-74-2		U	11.5	2.87
Di-n-octylphthalate	117-84-0		U	11.5	2.87
Dibenzo(a,h)Anthracene	53-70-3		U	11.5	2.87
Dibenzofuran	132-64-9		U	11.5	2.87
Diethylphthalate	84-66-2		U	11.5	2.87
Dimethylphthalate	131-11-3		U	11.5	2.87
Fluoranthene	206-44-0		U	11.5	2.87
Fluorene	86-73-7		U	11.5	2.87
Hexachlorobenzene	118-74-1		U	11.5	2.87
Hexachlorobutadiene	87-68-3		U	11.5	2.87
Hexachlorocyclopentadiene	77-47-4		U	11.5	2.87
Hexachloroethane	67-72-1		U	11.5	2.87
Indeno(1,2,3-cd)pyrene	193-39-5		U	11.5	2.87
Isophorone	78-59-1		U	11.5	2.87
N-Nitroso-di-n-propylamine	621-64-7		U	11.5	2.87
Diphenylamine/n-Nitrosodiphenylamine	86-30-6		U	11.5	2.87
Naphthalene	91-20-3		U	11.5	2.87
Nitrobenzene	98-95-3		U	11.5	2.87
Pentachlorophenol	87-86-5		U	46.0	14.4
Phenanthrene	85-01-8		U	11.5	2.87
Phenol	108-95-2		U	11.5	2.87
Pyrene	129-00-0		U	11.5	2.87

Surrogate	Recovery	Lower Limit	Upper Limit	Q
2,4,6-Tribromophenol	67.1	40	125	
2-Fluorobiphenyl	42.9	50	110	*
2-Fluorophenol	28.5	20	110	
Nitrobenzene-d5	48.5	40	110	
p-Terphenyl-d14	27.5	50	135	*

Certificate of Analysis

Surrogate	Recovery	Lower Limit	Upper Limit	Q
Phenol-d5	19.3	10	115	

U	Analyte was not detected. The concentration is below the reported LOD.

Certificate of Analysis

Sample #:	L13101692-01	**PrePrep Method:**	N/A	**Instrument:**	HPMS4
Client ID:	HTA-1013-WC	**Prep Method:**	3510C	**Prep Date:**	11/06/2013 11:35
Matrix:	Water	**Analytical Method:**	8270C	**Cal Date:**	10/29/2013 16:46
Workgroup #:	WG451837	**Analyst:**	CAA	**Run Date:**	11/07/2013 17:40
Collect Date:	10/25/2013 12:30	**Dilution:**	1	**File ID:**	4M68044
Sample Tag:	RE01	**Units:**	ug/L		

Analyte	CAS #	Result	Qual	LOQ	LOD
1,2,4-Trichlorobenzene	120-82-1		U	10.3	2.58
1,2-Dichlorobenzene	95-50-1		U	10.3	2.58
1,3-Dichlorobenzene	541-73-1		U	10.3	2.58
1,4-Dichlorobenzene	106-46-7		U	10.3	2.58
2,4,5-Trichlorophenol	95-95-4		U	10.3	2.58
2,4,6-Trichlorophenol	88-06-2		U	10.3	2.58
2,4-Dichlorophenol	120-83-2		U	10.3	2.58
2,4-Dimethylphenol	105-67-9		U	10.3	2.58
2,4-Dinitrophenol	51-28-5		U	41.2	12.9
2,4-Dinitrotoluene	121-14-2		U	10.3	2.58
2,6-Dinitrotoluene	606-20-2		U	10.3	2.58
2-Chloronaphthalene	91-58-7		U	10.3	2.58
2-Chlorophenol	95-57-8		U	10.3	2.58
2-Methylnaphthalene	91-57-6		U	10.3	2.58
2-Methylphenol	95-48-7		U	10.3	2.58
2-Nitroaniline	88-74-4		U	41.2	12.9
2-Nitrophenol	88-75-5		U	10.3	2.58
3,3'-Dichlorobenzidine	91-94-1		U	10.3	2.58
3-,4-Methylphenol	106-44-5		U	10.3	2.58
3-Nitroaniline	99-09-2		U	41.2	12.9
4,6-Dinitro-2-methylphenol	534-52-1		U	41.2	12.9
4-Bromophenyl-phenylether	101-55-3		U	10.3	2.58
4-Chloro-3-methylphenol	59-50-7		U	10.3	2.58
4-Chloroaniline	106-47-8		U	10.3	2.58
4-Chlorophenyl-phenyl ether	7005-72-3		U	10.3	2.58
4-Nitroaniline	100-01-6		U	41.2	12.9
4-Nitrophenol	100-02-7		U	41.2	12.9
Acenaphthene	83-32-9		U	10.3	2.58
Acenaphthylene	208-96-8		U	10.3	2.58
Anthracene	120-12-7		U	10.3	2.58
Benzo(a)anthracene	56-55-3		U	10.3	2.58
Benzo(a)pyrene	50-32-8		U	10.3	2.58

Certificate of Analysis

Analyte	CAS #	Result	Qual	LOQ	LOD
Benzo(b)fluoranthene	205-99-2		U	10.3	2.58
Benzo(g,h,i)Perylene	191-24-2		U	10.3	2.58
Benzo(k)fluoranthene	207-08-9		U	10.3	2.58
Benzoic acid	65-85-0		U	41.2	12.9
Benzyl alcohol	100-51-6		U	10.3	2.58
Bis(2-Chloroethoxy)Methane	111-91-1		U	10.3	2.58
Bis(2-Chloroethyl)ether	111-44-4		U	10.3	2.58
bis(2-Chloroisopropyl)ether	39638-32-9		U	10.3	2.58
bis(2-Ethylhexyl)phthalate	117-81-7		U	10.3	3.09
Butylbenzylphthalate	85-68-7		U	10.3	2.58
Chrysene	218-01-9		U	10.3	2.58
Di-N-Butylphthalate	84-74-2		U	10.3	2.58
Di-n-octylphthalate	117-84-0		U	10.3	2.58
Dibenzo(a,h)Anthracene	53-70-3		U	10.3	2.58
Dibenzofuran	132-64-9		U	10.3	2.58
Diethylphthalate	84-66-2		U	10.3	2.58
Dimethylphthalate	131-11-3		U	10.3	2.58
Fluoranthene	206-44-0		U	10.3	2.58
Fluorene	86-73-7		U	10.3	2.58
Hexachlorobenzene	118-74-1		U	10.3	2.58
Hexachlorobutadiene	87-68-3		U	10.3	2.58
Hexachlorocyclopentadiene	77-47-4		U	10.3	2.58
Hexachloroethane	67-72-1		U	10.3	2.58
Indeno(1,2,3-cd)pyrene	193-39-5		U	10.3	2.58
Isophorone	78-59-1		U	10.3	2.58
N-Nitroso-di-n-propylamine	621-64-7		U	10.3	2.58
Diphenylamine/n-Nitrosodiphenylamine	86-30-6		U	10.3	2.58
Naphthalene	91-20-3		U	10.3	2.58
Nitrobenzene	98-95-3		U	10.3	2.58
Pentachlorophenol	87-86-5		U	41.2	12.9
Phenanthrene	85-01-8		U	10.3	2.58
Phenol	108-95-2		U	10.3	2.58
Pyrene	129-00-0		U	10.3	2.58

Surrogate	Recovery	Lower Limit	Upper Limit	Q
2,4,6-Tribromophenol	78.4	40	125	
2-Fluorobiphenyl	66.3	50	110	
2-Fluorophenol	40.9	20	110	
Nitrobenzene-d5	67.5	40	110	
p-Terphenyl-d14	72.6	50	135	

Certificate of Analysis

Surrogate	Recovery	Lower Limit	Upper Limit	Q
Phenol-d5	27.5	10	115	

U	Analyte was not detected. The concentration is below the reported LOD.

Certificate of Analysis

Sample #:	L13101692-01	**PrePrep Method:**	N/A	**Instrument:**	ICP-THERMO2
Client ID:	HTA-1013-WC	**Prep Method:**	3015	**Prep Date:**	10/29/2013 14:04
Matrix:	Water	**Analytical Method:**	6010B	**Cal Date:**	10/31/2013 13:07
Workgroup #:	WG450815	**Analyst:**	KHR	**Run Date:**	10/31/2013 15:25
Collect Date:	10/25/2013 12:30	**Dilution:**	1	**File ID:**	T2.103113.152503
Sample Tag:	01	**Units:**	mg/L		

Analyte	CAS #	Result	Qual	LOQ	LOD
Arsenic, Total	7440-38-2		U	0.0100	0.00500
Barium, Total	7440-39-3	0.0313		0.0100	0.00500
Cadmium, Total	7440-43-9		U	0.0100	0.00500
Chromium, Total	7440-47-3		U	0.0200	0.0100
Lead, Total	7439-92-1		U	0.0100	0.00500
Silver, Total	7440-22-4		U	0.0100	0.00500

U	Analyte was not detected. The concentration is below the reported LOD.

Certificate of Analysis

Sample #:	L13101692-01	**PrePrep Method:**	N/A	**Instrument:**	ICP-MS2
Client ID:	HTA-1013-WC	**Prep Method:**	3015	**Prep Date:**	10/30/2013 11:48
Matrix:	Water	**Analytical Method:**	6020	**Cal Date:**	10/30/2013 09:31
Workgroup #:	WG450843	**Analyst:**	JYH	**Run Date:**	10/30/2013 17:17
Collect Date:	10/25/2013 12:30	**Dilution:**	1	**File ID:**	NI.103013.171718
Sample Tag:	01	**Units:**	mg/L		

Analyte	CAS #	Result	Qual	LOQ	LOD
Selenium, Total	7782-49-2	0.00415		0.00100	0.000500

Sample #:	L13101692-01	**PrePrep Method:**	N/A	**Instrument:**	CVAA1
Client ID:	HTA-1013-WC	**Prep Method:**	7470A	**Prep Date:**	10/31/2013 10:14
Matrix:	Water	**Analytical Method:**	7470A	**Cal Date:**	11/01/2013 10:23
Workgroup #:	WG451102	**Analyst:**	PDM	**Run Date:**	11/01/2013 10:48
Collect Date:	10/25/2013 12:30	**Dilution:**	1	**File ID:**	M7.110113.104843
Sample Tag:	01	**Units:**	mg/L		

Analyte	CAS #	Result	Qual	LOQ	LOD
Mercury	7439-97-6		U	0.000200	0.000100
U	Analyte was not detected. The concentration is below the reported LOD.				

Certificate of Analysis

Sample #:	L13101692-01	**PrePrep Method:**	N/A	**Instrument:**	ORION-4STAR
Client ID:	HTA-1013-WC	**Prep Method:**	9040C	**Prep Date:**	N/A
Matrix:	Water	**Analytical Method:**	9040C	**Cal Date:**	
Workgroup #:	WG450485	**Analyst:**	TMM	**Run Date:**	10/24/2013 14:21
Collect Date:	10/25/2013 12:30	**Dilution:**	1	**File ID:**	IN13102815554301
Sample Tag:		**Units:**	UNITS		

Analyte	CAS #	Result	Qual	LOQ	LOD
Corrosivity pH	10-29-7	7.42		0.000	0.000

Certificate of Analysis

Microbac Laboratories Inc.
Ohio Valley Division Analyst List
November 13, 2013

001 - BIO-CHEM TESTING WVDEP 220	002 - REIC Consultants, Inc. WVDEP 060
003 - Sturm Environmental	004 - MICROBAC PITTSBURGH
ADC - ANTHONY D. CANTER	ADG - APRIL D. GREENE
AJF - AMANDA J. FICKIESEN	AML - TONY M. LONG
AZH - AFTER HOURS	BAF - BRICE A. FENTON
BJO - BRIAN J. OGDEN	BLG - BRENDA L. GREENWALT
BRG - BRENDA R. GREGORY	CAA - CASSIE A. AUGENSTEIN
CAF - CHERYL A. FLOWERS	CEB - CHAD E. BARNES
CLC - CHRYS L. CRAWFORD	CLS - CARA L. STRICKLER
CLW - CHARISSA L. WINTERS	CPD - CHAD P. DAVIS
CRW - CHRISTINA R. WILSON	CSH - CHRIS S. HILL
CTB - CHRIS T. BUCINA	DAK - DEAN A. K
DCM - DAVID C. MERCKLE	DDE - DEBRA D. ELLIOTT
DEV - DAVID E. VANDENBERG	DIH - DEANNA I. HESSON
DLB - DAVID L. BUMGARNER	DLP - DOROTHY L. PAYNE
DLR - DIANNA L. RAUCH	DSM - DAVID S. MOSSOR
ECL - ERIC C. LAWSON	EDL - ERIN D. LONG
ENY - EMILY N. YOAK	EPT - ETHAN P. TIDD
ERP - ERIN R. PORTER	FJB - FRANCES J. BOLDEN
HJR - HOLLY J. REED	JBK - JEREMY B. KINNEY
JDH - JUSTIN D. HESSON	JKS - JANE K. SCHAAD
JLL - JOHN L. LENT	JWR - JOHN W. RICHARDS
JWS - JACK W. SHEAVES	JYH - JI Y. HU
KDW - KATHRYN D. WELCH	KEB - KATIE E. BARNES
KHR - KIM H. RHODES	KRA - KATHY R. ALBERTSON
KRB - KAELY R. BECKER	KSC - KELLY S. CUNNINGHAM
LKN - LINDA K. NEDEFF	LLS - LARRY L. STEPHENS
LSB - LESLIE S. BUCINA	MBK - MORGAN B. KNOWLTON
MDA - MIKE D. ALBERTSON	MDC - MIKE D. COCHRAN
MES - MARY E. SCHILLING	MLW - MATTHEW L. WARREN
MMB - MAREN M. BEERY	MRT - MICHELLE R. TAYLOR
MSW - MATT S. WILSON	PDM - PIERCE D. MORRIS
PIT - MICROBAC WARRENDALE	PSW - PEGGY S. WEBB
QX - QIN XU	RAH - ROY A. HALSTEAD
REK - BOB E. KYER	RLB - BOB BUCHANAN
RM - RAYMOND MALEKE	RNP - RICK N. PETTY
RS - ROSEMARY SCOTT	RWC - RODNEY W. CAMPBELL
SAV - SARAH A. VANDENBERG	SEP - SUZANNE J. PAUGH
SLM - STEPHANIE L. MOSSBURG	SLP - SHERI L. PFALZGRAF
TMB - TIFFANY M. BAILEY	TMM - TAMMY M. MORRIS
TPA - TYLER P. AMRINE	VC - VICKI COLLIER
WJB - WILL J. BEASLEY	WTD - WADE T. DELONG
XXX - UNAVAILABLE OR SUBCONTRACT	

Microbac Laboratories Inc.
List of Valid Qualifiers
November 13, 2013

Qualkey: DOD

Qualifier	Description
*	Surrogate or spike compound out of range
+	Correlation coefficient for the MSA is less than 0.995
<	Result is less than the associated numerical value.
>	Greater than
A	See the report narrative
B	The reported result is associated with a contaminated method blank.
B1	Target analyte detected in method blank at or above the method reporting limit
B3	Target analyte detected in calibration blank at or above the method reporting limit
B4	The BOD unseeded dilution water blank exceeded 0.2 mg/L
C	Confirmed by GC/MS
CG	Confluent growth
CT1	The cooler temperature at receipt exceeded regulatory guidelines for requested testing.
DL	Surrogate or spike compound was diluted out
E	Estimated concentration due to sample matrix interference
EDL	Elevated sample reporting limits, presence of non-target analytes
EMPC	Estimated Maximum Possible Concentration
F, S	Estimated result below quantitation limit; method of standard additions(MSA)
FL	Free Liquid
H1	Sample analysis performed past holding time.
I	Semiquantitative result (out of instrument calibration range)
J	Estimated concentration; sample matrix interference.
J	Estimated value ; the analyte concentration was greater than the highest standard
J	Estimated value ; the analyte concentration was less than the LOQ.
J	The reported result is an estimated value.
J,B	Analyte detected in both the method blank and sample above the MDL.
J,P	Estimate; columns don't agree to within 40%
J,S	Estimated concentration; analyzed by method of standard addition (MSA)
JB	The reported result is an estimated value. The reported result is also associated with a contaminated method blank.
JQ	The reported result is an estimated value and one or more quality control criteria failed. See narrative.
L	Sample reporting limits elevated due to matrix interference
L1	The associated blank spike (LCS) recovery was above the laboratory acceptance limits.
L2	The associated blank spike (LCS) recovery was below the laboratory acceptance limits.
M	Matrix effect; the concentration is an estimate due to matrix effect.
N	Nontarget analyte; the analyte is a tentativlely identified compound (TIC) by GC/MS
NA	Not applicable
ND	Not detected at or above the reporting limit (RL/MDL).
ND, CT1	Analyte was not detected. The concentration is below the reported LOD. The cooler temperature at receipt exceeded reg
ND, H1	Not detected; Sample analysis performed past holding time.
ND, L	Not detected; sample reporting limit (RL) elevated due to interference
ND, S	Not detected; analyzed by method of standard addition (MSA)
NF	Not found by library search
NFL	No free liquid
NI	Non-ignitable
NR	Analyte is not required to be analyzed
NS	Not spiked
P	Concentrations >40% difference between the two GC columns
Q	One or more quality control criteria failed. See narrative.
QNS	Quantity of sample not sufficient to perform analysis
RA	Reanalysis confirms reported results
RE	Reanalysis confirms sample matrix interference
S	Analyzed by method of standard addition (MSA)
SMI	Sample matrix interference on surrogate
SP	Reported results are for spike compounds only
TIC	Library Search Compound
TNTC	Too numerous to count
U	Analyte was not detected. The concentration is below the reported LOD.
UJ	Undetected; the MDL and RL are estimated due to quality control discrepancies.
UQ	Undetected; the analyte was analyzed for, but not detected.
W	Post-digestion spike for furnace AA out of control limits
X	Exceeds regulatory limit
X, S	Exceeds regulatory limit; method of standard additions (MSA)
Z	Cannot be resolved from isomer - see below

COC No. A 35225

158 Starlite Drive
Marietta, OH 45750

Microbac

CHAIN-OF-CUSTODY RECORD

Phone: 740-373-4071
Fax: 740-373-4835

Company Name: C B & I

Project Contact: Mark Lyon | Contact Phone #: 505-262-8920

Turn Around Requirements: Normal | Location: WSMR

Project ID: HTA Waste Characterization

Sampler (print): Bradley T. Davis | Signature: Bradley T. Davis

Program: ☐ CWA ☐ RCRA ☐ DOD ☐ AFCEE ☐ Other _____

ADDITIONAL REQUIREMENTS

Sample I.D. No.	Comp	Grab	Date	Time	Matrix*	NUMBER OF CONTAINERS	Hold	VOCs	SVOCs	RCRA 8 metals	pH	TOTAL # (LAB USE)
HTA-1013-WC	X		10-25-13	~~1500~~ BD 1230	W	7		X	X	X	X	

Relinquished by: (Signature)	Date	Time	Received by: (Signature)	Date	Time
Bradley T. Davis	10-25-13	1500			
Relinquished by: (Signature)	Date	Time	Remarks:		

Microbac OVD
Received: 10/26/2013 09:31
By: JACK SHEAVES
221000044319
Jack Sheaves

*Water (W), Soil (S), Solid Waste (SD), Unknown (X)

Microbac Laboratories Inc.

Internal Chain of Custody Report

Login: L13101692
Account: 3005
Project: 3005.011
Samples: 1
Due Date: 08-NOV-2013

Samplenum	Container ID	Products
L13101692-01	268935	

Bottle: 1

Seq.	Purpose	From	To	Date/Time	Accept	Relinquish	pH
1	LOGIN	COOLER	V1	28-OCT-2013 13:17	CLS		<2
2	ANALYZ	V1	ORG4	29-OCT-2013 08:48	JLL	CLS	
3	ANALYZ	ORG4	A1	11-NOV-2013 09:36	CLS	QX	

Bottle: 2

Seq.	Purpose	From	To	Date/Time	Accept	Relinquish	pH
1	LOGIN	COOLER	V1	28-OCT-2013 13:17	CLS		<2
2	ANALYZ	V1	ORG4	29-OCT-2013 08:48	JLL	CLS	
3	ANALYZ	ORG4	A1	11-NOV-2013 09:36	CLS	QX	

Bottle: 3

Seq.	Purpose	From	To	Date/Time	Accept	Relinquish	pH
1	LOGIN	COOLER	V1	28-OCT-2013 13:17	CLS		<2
2	ANALYZ	V1	ORG4	29-OCT-2013 08:48	JLL	CLS	
3	ANALYZ	ORG4	A1	11-NOV-2013 09:36	CLS	QX	

Samplenum	Container ID	Products
L13101692-01	268936	826-SPE 827-SPE

Bottle: 1

Seq.	Purpose	From	To	Date/Time	Accept	Relinquish	pH
1	LOGIN	COOLER	W1	28-OCT-2013 13:17	CLS		
2	PREP	W1	EXT	31-OCT-2013 07:12	CSH	RS	
3	DISP	EXT	DISP	01-NOV-2013 07:06	RLB	RLB	
4	ANALYZ*	EXT	SEMI	01-NOV-2013 11:14	CAA	CSH	

***Sample extract/digestate/leachate**

Bottle: 2

Seq.	Purpose	From	To	Date/Time	Accept	Relinquish	pH
1	LOGIN	COOLER	W1	28-OCT-2013 13:17	CLS		
2	STORE	W1	A1	31-OCT-2013 16:53	RS	RS	
3	PREP	A1	EXT	06-NOV-2013 08:39	JDH	CLS	
4	ANALYZ*	EXT	SEMI	06-NOV-2013 13:47	CAA	JDH	
5	DISP	EXT	DISP	08-NOV-2013 07:23	RLB	RLB	

***Sample extract/digestate/leachate**

A1 - Sample Archive (COLD)
A2 - Sample Archive (AMBIENT)
F1 - Volatiles Freezer in Login
V1 - Volatiles Refrigerator in Login
W1 - Walkin Cooler in Login

Microbac Laboratories Inc.

Internal Chain of Custody Report

Login: L13101692
Account: 3005
Project: 3005.011
Samples: 1
Due Date: 08-NOV-2013

Samplenum	Container ID	Products
L13101692-01	268937	COR-PH

Bottle: 1

Seq.	Purpose	From	To	Date/Time	Accept	Relinquish	pH
1	LOGIN	COOLER	W1	28-OCT-2013 13:17	CLS		
2	ANALYZ	W1	WET	28-OCT-2013 13:52	TMM	RS	
3	STORE	DIG	A1	07-NOV-2013 09:13	CLS	TMM	

Samplenum	Container ID	Products
L13101692-01	268938	AG AS-AX BA CD CR HG PB-AX SE-MS

Bottle: 1

Seq.	Purpose	From	To	Date/Time	Accept	Relinquish	pH
1	LOGIN	COOLER	W1	28-OCT-2013 13:17	CLS		
2	PREP	W1	DIG	29-OCT-2013 07:53	VC	AZH	
3	ANALYZ*	DIG	METALS	30-OCT-2013 12:27	KHR	VC	
4	STORE	DIG	A1	31-OCT-2013 13:02	RS	REK	

Sample extract/digestate/leachate

A1 - Sample Archive (COLD)
A2 - Sample Archive (AMBIENT)
F1 - Volatiles Freezer in Login
V1 - Volatiles Refrigerator in Login
W1 - Walkin Cooler in Login